

What is claimed is:

1. A polishing machine,
comprising:
an upper polishing plate for polishing upper faces of work pieces;
a lower polishing plate for polishing lower faces of the work pieces;
means for rotating at least one of said polishing plates;
a plurality of carriers being provided around a center of gravity of said upper polishing plate and sandwiched between said polishing plates, each of said carriers having a through-hole, in which the work piece is accommodated;
means for independently performing circular motion or swing motion of said carriers without revolving on their own axes; and
means for controlling said performing means,
whereby centers of gravity of the work pieces, which are held by said carriers, are simultaneously moved close to a center of gravity of said upper polishing plate and simultaneously moved away therefrom, and moving distances of the centers of gravity of the work pieces are equal while the circular motion or the swing motion of said carriers.
2. The polishing machine according to claim 1,
further comprising means for orbiting said carriers round a rotational axis of said lower polishing plate,
wherein said rotating means rotates the both of said polishing plates.
3. The polishing machine according to claim 1,
wherein said performing means is located close to said lower polishing plate, and
connecting sections, which are respectively formed in extended sections of said carriers projected from an outer edge of said lower polishing plate, are

respectively connected with connecting members of said performing means.

4. The polishing machine according to claim 1,
wherein said lower polishing plate has a donut-shape with a center hole,
a couple of said performing means are respectively located close to an inner circumferential face of the center hole of said lower polishing plate and an outer circumferential face of said lower polishing plate, and
connecting sections, which are formed in said carriers and located close to the inner circumferential face and the outer circumferential face of said lower polishing plate, are respectively connected with connecting members of said performing means.
5. The polishing machine according to claim 1,
wherein said performing means includes eccentric arms, which are rotatable and in each of which a connecting pin connected with said carrier is eccentrically provided.
6. The polishing machine according to claim 1,
wherein said performing means includes:
eccentric arms, which are rotatable and in each of which a first connecting pin connected with said carrier is eccentrically provided; and
swing arms, which are swingable and in each of which a second connecting pin is connected with said carrier at a position separated from said first connecting pin.
7. The polishing machine according to claim 1,
wherein phases of the circular motion or the swing motion of said carriers provided to said lower polishing plate are same.

8. The polishing machine according to claim 1,
wherein an even number of said carriers are provided to said lower polishing plate, and
phases of the circular motion or the swing motion of said adjacent carriers are shifted 180 degrees.
9. The polishing machine according to claim 1,
wherein each of said carriers has a plurality of the through-holes.
10. The polishing machine according to claim 1,
wherein each of said carriers is formed into a diamond shape or a sector shape.
11. A polishing machine,
comprising:
a fixed upper polishing plate for polishing upper faces of work pieces;
a rotatable lower polishing plate for polishing lower faces of the work pieces;
means for rotating said lower polishing plate;
a plurality of carriers being provided around a center of gravity of said upper polishing plate and sandwiched between said polishing plates, each of said carriers having a through-hole, in which the work piece is accommodated;
means for independently performing circular motion or swing motion of said carriers without revolving on their own axes;
means for orbiting said carriers round a rotational axis of said lower polishing plate; and
means for controlling said performing means,
whereby centers of gravity of the work pieces, which are held by said carriers, are simultaneously moved close to a center of gravity of said upper polishing

plate and simultaneously moved away therefrom, and moving distances of the centers of gravity of the work pieces are equal while the circular motion or the swing motion of said carriers.

12. The polishing machine according to claim 11,
wherein said performing means is located close to said lower polishing plate, and

connecting sections, which are respectively formed in extended sections of said carriers projected from an outer edge of said lower polishing plate, are respectively connected with connecting members of said performing means.

13. The polishing machine according to claim 11,
wherein said lower polishing plate has a donut-shape with a center hole,
a couple of said performing means are respectively located close to an inner circumferential face of the center hole of said lower polishing plate and an outer circumferential face of said lower polishing plate, and

connecting sections, which are formed in said carriers and located close to the inner circumferential face and the outer circumferential face of said lower polishing plate, are respectively connected with connecting members of said performing means.

14. The polishing machine according to claim 11,
wherein said performing means includes eccentric arms, which are rotatable and in each of which a connecting pin connected with said carrier is eccentrically provided.

15. The polishing machine according to claim 11,
wherein said performing means includes:
eccentric arms, which are rotatable and in each of which a first connecting pin

connected with said carrier is eccentrically provided; and

swing arms, which are swingable and in each of which a second connecting pin is connected with said carrier at a position separated from said first connecting pin.

16. The polishing machine according to claim 11,
wherein phases of the circular motion or the swing motion of said carriers provided to said lower polishing plate are same.

17. The polishing machine according to claim 11,
wherein an even number of said carriers are provided to said lower polishing plate, and
phases of the circular motion or the swing motion of said adjacent carriers are shifted 180 degrees.

18. The polishing machine according to claim 11,
wherein each of said carriers has a plurality of the through-holes.

19. The polishing machine according to claim 11,
wherein each of said carriers is formed into a diamond shape or a sector shape.